SPECIFICATION

Title of the Invention

EXTRUDING CONTAINER OF APPLYING FILLER

Technical Field

The present invention relates to an extruding container of an applying filler for extruding the applying filler so as to apply.

Background Art

In conventional, as a movable body feeding apparatus provided for use by extruding an applying filler, for example, a liquid filler installed in a container, there has been known a movable body feeding apparatus which is provided with a main body tube in which a filling region where an applying filler is filled is provided in an inner portion, and an operating tube provided in a rear end portion of the main body tube so as to be relatively rotatable, and is structured such that when the main body tube and the operating tube are relatively rotated, the main body tube and a movable body received within the operating tube move forward, and the applying filler is extruded to a leading end side on the basis of a forward movement of a piston provided in a leading end of the movable body, whereby it is possible to apply the applying filler to a portion

to be applied through an opening of a discharge cover attached to the leading end of the main body tube (for example, refer to Japanese Unexamined Patent Publication No. 2004-89687

Disclosure of the Invention

Problem to be Solved by the Invention

In the apparatus mentioned above, the apparatus is obtained by first assembling the movable body having the piston with the operating tube, next assembling the main body tube with the operating tube having the movable body, next setting the assembly to a standing state, introducing and filling the applying filler to a filling region formed between an open end of the comparatively long main body tube and the piston from the open end side of the main body tube, and finally coating with the discharge cover.

However, in the apparatus mentioned above, since a space in which the applying filler is not filled is made in an inner side of the leading end of the coated discharge cover, and the applying filler is hard to come out due to the space at a first applying time by a user after buying, an improvement is desired.

The present invention is made for achieving the problem mentioned above, and an object of the present invention is to provide an extruding container of an

applying filler, in which an applying filler is rapidly discharged at a first applying time by a user, so that customer satisfaction is increased.

Means for Solving the Problem

In accordance with the present invention, there is provided an applying filler extruding container discharging an applying filler filled in a filling region within a container through a discharge port provided in a leading end of the container on the basis of forward movement of a movable body arranged within the container, comprising:

a leading tube formed in a tubular shape and having the discharge port at a leading end; and

a main body side assembly made by installing the movable body, an engagement portion of a male thread and a female thread for moving the movable body and a rotation preventing portion of the movable body in a main body side tube portion formed in a tubular shape,

wherein an inner portion of the leading tube is formed as the filling region so as to be formed as a filling member in which the applying filler is filled, and the filling member in which the applying filler is filled is inserted to the leading end side of the main body side assembly so as to be attached to the main body side assembly.

In accordance with the applying filler extruding container, since the structure is made such that the leading tube having the discharge port is formed as the filling member, and the filling member in which the applying filler is filled by setting the inner side of the filling member as the filling region is inserted and attached to the leading end side of the main body side assembly formed by installing the movable body, the engagement portion for moving the movable body and the rotation preventing portion, it is possible to sufficiently fill the applying filler in the region between the inner side of the discharge port of the filling member and the movable body of the main body side assembly, and the applying filler can be rapidly discharged at the first applying time by the user.

In this case, as a particular structure effectively achieving the operation mentioned above, the main body side assembly is provided with a main body tube having a female thread engaging with a male thread provided in an outer surface of the movable body, an operating tube coupled to a rear end side of the main body tube so as to be rotatable and immobile in an axial direction, and a shaft body portion extended from a bottom portion of the operating tube and having a non-circular cross sectional shape, in the middle

of the inner surface in an axial direction, the movable body is formed in a tubular shape, is outside inserted to the shaft body portion and is engaged with the non-circular shape of the shaft body portion so as to be non-rotatable and movable in the axial direction, an engagement portion between the movable body and the shaft body portion is formed as a rotation preventing portion, a locking portion provided in an outer surface in a rear half side of the filling member is coupled to a locking portion provided in an inner surface in a leading end side of the main body tube so as to be non-rotatable and immobile in the axial direction, and the movable body is moved on the basis of a relative rotation of the operating tube and the main body tube or the filling member.

In accordance with the structure mentioned above, since the structure is made such that the locking portion in the outer surface of the filling member and the locking portion in the inner surface of the main body tube are directly locked via no other member, it is possible to make the applying filler extruding container thin.

Further, as the other particular structure effectively achieving the operation mentioned above, the main body side assembly is provided with a main

body tube, a thread tube received in the main body tube so as to be rotatable and immobile in an axial direction and having in an inner surface a female thread engaging with a male thread provided in an outer surface of the movable body, and a shaft body portion extended from a bottom portion of the main body tube and having a non-circular cross sectional shape, the movable body is formed in a tubular shape, is outside inserted to the shaft body portion and is engaged with the non-circular shape of the shaft body portion so as to be non-rotatable and movable in the axial direction, an engagement portion between the movable body and the shaft body portion is formed as a rotation preventing portion, a locking portion provided in an inner surface in a rear end side of the filling member is coupled to a locking portion provided in an outer surface of the thread tube so as to be non-rotatable and immobile in the axial direction, and the movable body is moved on the basis of a relative rotation of the main body tube and the filling member.

In accordance with the structure mentioned above, since the structure is made such that a cap covering the filling member is not directly locked to the filling member so as to be rotatable, the movable body is not fed out even if the cap and the main body tube are

relatively rotated at a non-use time when the cap is put on the filling member, the applying filler does not leak out from the discharge port of the filling member.

Further, the structure may be made such that the main body side assembly has a predetermined built-in engagement portion, and a built-in rotating amount regulating member having a concavo-convex portion arranged so as to face to the predetermined engagement portion in an axial direction and energized toward the predetermined engagement portion by an elastic portion, and the concavo-concave portion of the rotating amount regulating member and the predetermined engagement portion are engaged by click in accordance with a fixed amount relative rotation in forward and reverse directions between the filling member and the member coupling the filling member so as to be rotatable and immobile in the axial direction. In accordance with this structure, a forward moving degree and a returning degree of the movable body is detected by the user in accordance with a click feeling on the basis of the click engagement. Further, a predetermined space is formed in an inner side of the discharge port of the filling member by returning the movable body to a certain degree while the user detects the returning degree of

the movable body in accordance with the click feeling after applying. Accordingly, even if the applying filler filled in the filling region and the air mixed into the applying filler are expanded on the basis of temperature variation and variation of atmospheric pressure, it is possible to prevent the applying filler from leaking out from the discharge port on the basis of the predetermined space provided in the inner side of the discharge port.

Further, the structure may be made such that the concavo-convex portion and the engagement portion constitute a ratchet mechanism allowing one-way rotation, and allow only forward movement of the movable body.

In this case, if a rotating force for moving backward more is applied to the movable body existing in a maximum retreated position, there is a risk that the shaft body portion engaging with the movable body is wrenched off in a bottom surface of the operating tube or the main tube. Accordingly, it is preferable that a plurality of concave portions depressed to the leading end side or a plurality of convex portions protruding to the rear side are provided in a rear end surface of the movable body along a peripheral direction, and a plurality of convex portions moving forward to

the concave portions of the movable body at the maximum retreated time of the movable body so as to be engaged in the rotating direction, or a plurality of concave portions to which the convex portions of the movable body move forward so as to be engaged in the rotating direction are provided in the bottom surface of the operating tube or the main body tube and a peripheral edge of the shaft body portion.

In the case of employing the structure mentioned above, since the rotating force applied to the shaft body portion at the maximum retreated time of the movable body so as to retreat the movable body more is applied to a plurality of convex portions provided in the bottom surface of the operating tube or the main body tube and in the peripheral edge of the shaft body portion via a plurality of concave portions provided in the rear end surface of the movable body, or a plurality of concave portions provided in the bottom surface of the operating tube or the main body tube and in the peripheral edge of the shaft body portion via a plurality of convex portions provided in the rear end surface of the movable body so as to be dispersed, it is possible to prevent the shaft body portion from being wrenched off.

Effect of the Invention

As mentioned above, in accordance with the applying filler extruding container on the basis of the present invention, since the applying filler is rapidly discharged at the first applying time by the user, it is possible to provide the applying filler extruding container in which a customer satisfaction is improved.

Brief Description of the Drawings

Fig. 1 is a longitudinal sectional view showing an applying filler extruding container in accordance with a first embodiment of the present invention;

Fig. 2 is a longitudinal sectional view showing a state that a cap of the applying filler extruding container in accordance with the first embodiment of the present invention is taken off, and that a movable body is at a maximum forward moving time;

Fig. 3 is a longitudinal sectional view showing a main body tube in Figs. 1 and 2;

Fig. 4 is an orthogonal longitudinal sectional view of the main body tube shown in Fig. 3;

Fig. 5 is a side view showing an operating tube in Figs. 1 and 2;

Fig. 6 is a left side view of the operating tube shown in Fig. 5;

Fig. 7 is a view as seen in an arrow direction

at a line VII-VII in Fig. 6;

Fig. 8 is a perspective view along a line VIII-VIII in Fig. 6;

Fig. 9 is a side view showing the movable body in Figs. 1 and 2;

Fig. 10 is a view as seen in an arrow direction at a line X-X in Fig. 9;

Fig. 11 is a perspective view of the movable body shown in Fig. 9

Fig. 12 is a longitudinal sectional perspective view of the movable body shown in Fig. 11;

Fig. 13 is a perspective view showing a thread tube in Figs. 1 and 2;

Fig. 14 is a longitudinal sectional perspective view of the thread tube shown in Fig. 13;

Fig. 15 is a perspective view of a click spring member in Figs. 1 and 2 as seen from the rear;

Fig. 16 is a perspective view of the click spring member shown in Fig. 15 as seen from the side;

Fig. 17 is a longitudinal sectional perspective view showing a filling member in Figs. 1 and 2;

Fig. 18 is an exploded perspective view showing an assembling procedure of the applying filler extruding container shown in Fig. 1;

Fig. 19 is an explanatory view showing a change

of state of an applying body and the applying filler on the basis of use of the applying filler extruding container shown in Figs. 1 and 2;

Fig. 20 is a longitudinal sectional perspective view of a rear end portion of the applying filler extruding container, to show another example of a shaft body wrench-off preventing mechanism in Figs. 1 and 2;

Fig. 21 is a perspective view showing a ratchet spring member used in place of the click spring member shown in Figs. 15 and 16 from the rear;

Fig. 22 is a perspective view showing the ratchet spring member shown in Fig. 21 from the side;

Fig. 23 is a perspective view showing another example of the applying body in Fig. 17;

Fig. 24 is a view showing further another example of the applying body in Fig. 17, with an explanation to show a change of state of the applying body and the applying filler on the basis of use;

Fig. 25 is a longitudinal sectional view of the applying filler extruding container showing further another example of the filling member and the applying body shown in Fig. 17;

Fig. 26 is a longitudinal sectional view of the applying filler extruding container showing further

another example of the filling member and the applying body shown in Fig. 17;

Fig. 27 is a view showing a state that the movable body of the applying filler extruding container shown in Fig. 26 is at a maximum forward moving time;

Fig. 28 is a perspective view showing an elastic body within the container in Figs. 26 and 27;

Fig. 29 is a longitudinal sectional view showing an applying filler extruding container in accordance with a second embodiment of the present invention;

Fig. 30 is a longitudinal sectional view showing a state that a cap of the applying filler extruding container in accordance with the second embodiment of the present invention is taken off, and that a movable body is at a maximum forward moving time;

Fig. 31 is a longitudinal sectional view showing a main body tube in Figs. 29 and 30;

Fig. 32 is a left side view of the main body tube shown in Fig. 31;

Fig. 33 is a perspective view showing a thread tube in Figs. 29 and 30 from a front side;

Fig. 34 is a perspective view showing the thread tube shown in Fig. 33 from the rear;

Fig. 35 is a longitudinal sectional view of the thread tube shown in Figs. 33 and 34;

Fig. 36 is a perspective view showing a ratchet spring member shown in Figs. 29 and 30;

Fig. 37 is a longitudinal sectional view of the ratchet spring member shown in Fig. 36;

Fig. 38 is a perspective view showing a thread tube presser member in Figs. 29 and 30;

Fig. 39 is a longitudinal sectional view of the thread tube presser member shown in Fig. 38;

Fig. 40 is a longitudinal sectional view of a filling member in Figs. 29 and 30;

Fig. 41 is a broken perspective view of the filling member in Figs. 29 and 30;

Fig. 42 is an enlarged view of a locking portion with respect to the thread tube of the filling member shown in Fig. 40;

Fig. 43 is an exploded perspective view showing an assembling procedure of the applying filler extruding container shown in Fig. 29; and

Fig. 44 is a perspective view of the click spring member used in place of the ratchet spring member shown in Figs. 36 and 37 as seen from the side.

Best Mode for Carrying Out the Invention

A description will be given of a preferable embodiment of an applying filler extruding container in accordance with the present invention with reference

to Figs. 1 to 44. In this case, each of the drawings, the same reference numerals are attached to the same elements and an overlapping description will be omitted.

Figs. 1 to 28 show a first embodiment in accordance with the present invention, and Figs. 29 to 44 show a second embodiment in accordance with the present invention, respectively. The applying filler extruding container in accordance with the present embodiment can appropriately extrude the applying filler on the basis of an operation of a user as well as receiving the applying filler.

In this case, a lip gloss is employed as a particularly preferable example of the applying filler, however, the applying filler is not limited to this, but can be a liquid, a kneaded semisolid including a jelly and a paste, and a solid and the like, such as a lip color, an eye color, an eye liner, an essence, a cleaning solvent, a nail enamel, a nail care liquid solution, a nail enamel remover, a mascara, an anti-aging, a hair color, a hair cosmetic, an oral care, a massage oil, a keratotic plugging reducer, a foundation, a concealer, a skin cream, an ink for a writing instrument including a marking pen, a liquid medicine, a slurry and the like. It is particularly

preferable for achieving the present invention to employ the applying filler having a high viscosity.

As shown in Figs. 1 and 2, an applying filler extruding container 100 is provided with a filling member 1 corresponding to a leading tube having in an inner portion a filling region 1x in which an applying filler L is filled, a main body tube (a main body side tube body) 2 coupling the filling member 1 so as to be non-rotatable and immobile in an axial direction in a state in which a rear half portion of the filling member 1 is inserted into a front half portion thereof, an operating tube (a main body side tube body) 3 coupled to a rear end portion of the main body tube 2 so as to be relatively rotatable and immobile in the axial direction, and an applying body 10 constituting a leading end portion of the filling member 1 and provided for applying the applying filler L, as an outer structure. Further, an inner side of the container is generally provided with a movable body 6 having an elastic body 9 in a leading end portion and moving forward and backward in the axial direction by relatively rotating the main body tube 2 or the filling member 1 and the operating tube 3, a thread tube 4 serving as an engagement mechanism (an engagement portion) which can move the movable body 6 on the basis of the relative

rotation, and a click mechanism 11 giving a click feeling in synchronous with the relative rotation in forward and reverse directions.

As shown in Figs. 3 and 4, the main body tube 2 is structured in a cylindrical shape, and has a knurling 2a, which is provided with a lot of concavities and convexities in parallel in a peripheral direction and in which the concavities and convexities extend at a predetermined length in an axial direction, in an inner peripheral surface of a center portion in an axial direction thereof. The knurling 2a is provided such that a front half portion thereof engages the filling member 1 in a rotating direction, and a rear half portion engages the thread tube 4 in the rotating direction. Further, an annular protruding portion 2b for engaging the filling member 1 in an axial direction is provided in an inner peripheral surface of a leading end portion of the main body tube 2. Further, two protruding portions 2c extending in a circular arc shape along a peripheral direction are formed in an inner peripheral surface in a rear portion side of the main body tube 2, and two protruding portions 2d extending in a circular arc shape along a peripheral direction are formed at a front side position from the circular arc shaped protruding portion 2c. The circular arc shaped

protruding portion 2c is provided for engaging the operating tube 3 in the axial direction, and the circular arc shaped protruding portion 2d is provided for engaging the thread tube 4 in the axial direction. The circular arc shaped protruding portion 2c and the circular arc shaped protruding portion 2d are provided at positions which do not overlap in the axial direction.

The operating tube 3 is structured in a closed-end cylindrical shape as shown in Figs. 5 to 8, is provided with a leading end tube portion 3a having a small outer diameter in a leading end side, and is provided with an annular groove portion 3b for engaging with the circular arc shaped protruding portion 2c of the main body tube 2 in the axial direction, as shown in Figs. 5, 7 and 8, in an outer peripheral surface of the leading end tube portion 3a.

A shaft body (a shaft body portion) 3c is provided in a rising manner in a center of a bottom portion in the operating tube 3 so as to extend toward a leading end side, as shown in Figs. 5 to 8. The shaft body 3c is formed in a non-circular shape in cross section provided with protrusions 3d arranged so as to protrude in a radial direction at six equal positions along a peripheral direction on an outer peripheral surface of a columnar body and extending in an axial direction,

and the protrusions 3d are formed as a rotation prevention constituting one side of rotation preventing mechanisms (rotation preventing portions) of the movable body 6.

Further, as shown in Figs. 6 to 8, the operating tube 3 is provided with protrusions 3e extending toward a leading end side from a bottom portion at eight equal positions along the peripheral direction, in an inner peripheral surface thereof. In the protrusion 3e, a leading end portion 3f is formed as a predetermined engagement portion constituting a click mechanism 11. Further, in the present embodiment, a leading end surface of the leading end portion 3f of the protrusion 3e is formed as an inclined surface inclined in one direction.

Further, a peripheral edge of the shaft body 3c in a bottom surface of the operating tube 3 is provided with a protruding portion 3g protruding short to the leading end side and formed for engaging with the movable body 6 in a rotating direction at the maximum retreated time of the movable body 6. The protruding portion 3g structures one side of shaft body wrench-off preventing mechanisms for preventing the shaft body 3c from being wrenched off at a time when an excessive rotating force is applied to the shaft body 3c, and

is provided so as to be connected to a rear end portion of each of the protrusions 3d of the shaft body 3c.

The operating tube 3 is inside inserted to the main body tube 2 from the leading end tube portion 3a as shown in Figs. 1 and 2, a step surface between the leading end tube portion 3a and a closed-end portion in a rear side thereof is brought into contact with a rear end surface of the main body tube 2, and the annular groove portion 3b engages with the circular arc shaped protruding portion 2c of the main body tube 2, thereby the operating tube 3 being attached to the main body 2 so as to be rotatable and immobile in the axial direction.

The thread tube 4 is formed in such a shape that an inside cylindrical tubular body 4b is connected to a leading end side of an outer cylindrical tubular body 4a, as shown in Figs. 13 and 14, and is provided with a female thread 4c structuring one side of engagement mechanisms (engagement portions) in an inner peripheral surface of the inside tubular body 4b. A protrusion 4d for engaging with the knurling 2a of the main body tube 2 in the rotating direction is formed from a leading end to a rear end portion at a plurality of positions in the peripheral direction, on an outer peripheral surface of the outer tubular body 4a

structuring the thread tube 4, and an annular groove portion 4e for engaging with the circular arc shaped protruding portion 2d of the main body tube 2 in the axial direction is formed at a position close to the rear end surface. Further, an inner peripheral surface of the outer tubular body 4a is provided with a knurling 4f in which a lot of concavities and convexities are provided in parallel and the concavities and convexities extend in an axial direction. The knurling 4f is provided for engaging a click spring member 12 constituting the click mechanism 11 in a rotating direction.

The thread tube 4 is inside inserted to the main body tube 2 from a rear end portion thereof as shown in Figs. 1 and 2, the annular groove portion 4e is engaged with the circular arc shaped protruding portion 2d of the main body tube 2, and the protrusion 4d is engaged with the knurling 2a of the main body tub 2, thereby the thread tube 4 being attached to the main body tube 2 so as to be no-rotatable and immobile in the axial direction.

The click spring member 12 constitutes a rotating amount regulating member, and is formed as an injection molded product by a resin. The click spring member 12 is structured approximately in a cylindrical shape

as shown in Figs. 15 and 16, and is integrally formed in a rear end surface thereof so as to have click teeth 12a in which concavo-convex portions engaging with the leading end portions 3f of the protrusions 3e of the operating tube 3 are provided along a peripheral direction, and have a compression spring portion 12b serving as an elastic portion connecting to a rear end portion having the click teeth 12a. The click tooth 12a is structured in a chevron shape having an ascending incline and a descending incline along the peripheral direction. Further, the compression spring portion 12b is provided with an approximately spiral slit 12c in a peripheral wall thereof, and energizes the pressed click teeth 12a against the pressing force by the slit 12c. Further, a plurality of protrusions 12d for engaging with the knurling 4f of the thread tube 4 in the rotating direction are provided in an outer peripheral surface of a rear end portion of the click spring member 12 along the peripheral direction.

In the click spring member 12, as shown in Figs. 1 and 2, the leading end portion is received in the thread tube 4 so as to be positioned between the outer tubular body 4a and the inner tubular body 4b of the thread tube 4, and the protrusions 12d are engaged with the knurlings 4f of the thread tube 4, whereby the click

spring member 12 is set non-rotatable with respect to the thread tube 4. In this state, the click spring member 12 is arranged so as to be pinched between a back face of the leading end portion connecting the outer and inner tubular bodies 4a and 4b of the thread tube 4 and the leading end portions 3f of the protrusions 3e of the operating tube 3. Further, the click teeth 12a of the click spring member 12 are energized to a rear side by the compression spring portion 12b, and is set in a click engagement state with respect to the leading end portions 3f of the protrusions 3e of the operating tube 3.

In this case, the shapes of the click tooth 12a of the click spring member 12 and the leading end portion 3f of the protrusion 3e of the operating tube 3 engaged by click therewith are not limited to those mentioned above, but may employ other shapes as far as the click engagement is achieved by the relative rotation in the forward and reverse directions.

The movable body 6 is structured in the cylindrical shape having a collar portion 6a in a leading end side, as shown in Figs. 9 to 12, and is provided with a male thread 6b constituting the other side of the engagement mechanisms (the engagement portions) in an outer peripheral surface extending to a rear end portion from

a rear side of the collar portion 6a. Further, an annular protruding portion 6c for engaging the elastic body 9 in an axial direction is formed in an outer peripheral surface of a front side of the collar portion 6a of the movable body 6, as shown in Figs. 9 and 12. Further, as shown in Fig. 12, an inner peripheral surface reaching a rear end from the periphery of the collar portion 6a of the movable body 6 is provided with protrusions 6e arranged so as to protrude to an inner side in a radial direction and extending in the axial direction, at six equal positions along the peripheral direction, as shown in Figs. 10 and 12, and the protrusions 6e are formed as the rotation prevention constituting the other side of the rotation preventing mechanism (the rotation preventing portion) of the movable body 6. Further, a rear end surface of the movable body 6 is provided with grooves 6f serving as a concave portion concaved short to the leading end side and communicating the inner and outer sides of the movable body 6, at six equal positions along the peripheral direction, as shown in Figs. 11 and 12. The grooves 6f constitute the other side of the shaft body wrench-off preventing mechanisms, and move forward to the protruding portion 3g of the operating tube 3 and engages in the rotating direction at the maximum

retreated time of the movable body 6.

The movable body 6 is outside inserted to the shaft body 3c of the operating tube 3 from the rear end portion thereof and is inside inserted to the tubular body 4b in the inner side of the thread tube 4, as shown in Figs. 1 and 2. In a state in which the male thread 6b is engaged with the female thread 4c of the thread tube 4, the protrusion 6e is engaged with a portion between the protrusions 3d and 3d of the shaft body 3c and is attached to the operating tube 3 so as to be non-rotatable and movable in the axial direction.

The elastic body 9 is formed by a soft elastic material which tends to be elastically deformed, for example, a silicone rubber or the like. In addition to the silicone rubber, it is possible to select a thermosetting raw material in accordance with compression molding such as a nitrile rubber (NBR), an ethylene propylene rubber (EPR), a butyl rubber (IIR) and the like, and a thermoplastic raw material in accordance with an injection molding such as a polyurethane-based elastomer (TPU), a polyolefin-based elastomer (TPO), a polyester-based elastomer (TPEE) and the like.

The elastic body 9 is formed in a bell shape tapered toward a leading end, as shown in Fig. 1, is provided

with a stepped concave portion 9a extending at a predetermined length toward a leading end side from the rear end surface, and has an annular groove portion 9b and an annular protruding portion 9c for engaging with the annular protruding portion 6c of the movable body 6 in the axial direction, in a rear portion side of the concave portion 9a. Further, the elastic body 9 is provided in an outer peripheral surface of a rear end portion with an annular protruding portion 9g closely attached to the inner peripheral surface of the filling member 1 for securing water tightness.

The elastic body 9 is outside inserted to the movable body 6 from a rear portion side thereof, the rear end surface is brought into contact with the leading end surface of the collar portion 6a of the movable body 6, and the annular groove portion 9b and the annular protruding portion 9c are engaged with the annular protruding portion 6c of the movable body 6, whereby the elastic body 9 is attached to the movable body 6 so as to be rotatable and immobile in the axial direction. In this state, a space 9d for promoting elastic deformation of the elastic body 9 is defined in a front half side within the elastic body 9, by the leading end portion of the movable body 6 moving forward into the concave portion 9a. Dimensions, an arrangement

and the like of the elastic body 9 are set such that the elastic body 9 reaches the rear end portion of the applying body 10 in the leading end of the filling member 1 in the case that the movable body 6 moves forward to the maximum.

Further, the engagement mechanism is constituted by the male thread 6b of the movable body 6 and the female thread 4c of the thread tube 4, the rotation preventing mechanism is constituted by the protrusions 6e of the movable body 6 and the protrusions 3d of the shaft body 3c, the click mechanism 11 is constituted by the click teeth 12a and the compression spring portion 12b of the click spring member 12, and the leading end portions 3f of the protrusions 3e of the operating tube 3, and the extruding mechanism of the applying filler L constituted by them, the movable body 6 and the elastic body 9 are installed in the main body side tube body comprising the main body tube 2 and the operating tube 3, whereby the main body side assembly 40 is structured (refer to Fig. 18).

The filling member 1 is provided for filling the applying filler L in the inner filling region 1x, and is provided for discharging the applying filler L from the leading end portion in accordance with the operation by a user. It is preferable that the material of the

filling member 1 is constituted by an injection molded plastic such as a polyethylene terephthalate (PET), a polypropylene (PP) or the like, and it is preferable that the material is constituted by a transparent material for checking out a color tone and a filling condition of the applying filler L.

The filling member 1 is formed in a cylindrical shape as shown in Figs. 1, 2 and 17, and an outer surface 1a of the leading end portion is formed as an inclined surface inclined in a predetermined direction. Further, an inner surface 1b formed as an inclined surface is formed in the leading end portion of the filling member 1 at a distance of a fixed thickness with respect to the outer surface 1a, and an opening 1c communicating the inner surface 1b with the outer surface 1a is provided.

Further, an outer peripheral surface of the filling member 1 is provided with a collar portion 1d in which an outer diameter is made large so as to be brought into contact with an open end in a leading end side of the main body tube 2, approximately in a center portion in the axial direction, and an annular protruding portion 1e for detachably locking a cap 7 (refer to Fig. 1) covering a front side of the collar portion 1d of the filling member 1 in the axial direction

is provided at a front position close to the collar portion 1d. Further, the annular groove portion 1g and the annular protruding portion 1f for being engaged with the annular protruding portion 2b of the main body tube 2 in the axial direction are provided in parallel in the axial direction, at a rear position close to the collar portion 1d, on the outer peripheral surface of the filling member 1, and protrusions 1h extending in an axial direction are respectively formed at four equal positions in the peripheral direction, in the position of the rear end portion. The protrusion 1h is provided for being engaged with the knurling 2a of the main body tube 2 in the rotating direction. Further, as shown in Fig. 17, an air vent groove 1i open to a rear side and extending short toward the leading end side is provided in an inner peripheral surface of the rear end portion of the filling member 1.

The filling member 1 is inside inserted to the main body tube 2 from a rear portion side thereof, a rear end surface of the collar portion 1d is brought into contact with an open end in a leading end side of the main body tube 2 as shown in Figs. 1 and 2, the annular groove portion 1g and the annular protruding portion 1f are engaged with the annular protruding portion 2b of the main body tube 2, and the protrusion

1h is engaged with the knurling 2a of the main body tube 2, whereby the filling member 1 is attached to the main body tube 2 so as to be non-rotatable and immobile in the axial direction, and is integrally formed with the main body tube 2. Further, the cap 7 is attachable to the filling member 1 as shown in Fig. 1.

The filling member 1 is provided with the applying body 10 for applying the applying filler L in the leading end portion, as shown in Figs. 1, 2 and 17. The applying body 10 is constituted by an elastic body made of a rubber material, an elastomer material or the like, and is provided with a curved disc-shaped applying portion 10a curved in such a manner that a portion near a center portion protrudes, and an annular attaching portion 10b continuously provided so as to protrude to a back surface in a peripheral edge side of the applying portion 10a, as shown in Fig. 17.

The applying portion 10a is provided with a discharge port 10c communicating an inner surface with an outer surface and formed for discharging the applying filler L, and the attaching portion 10b is provided with an annular groove portion 10d concaved to an axial side in an outer peripheral surface at a root position close to the applying portion 10a, as a structure

engaging with the peripheral edge portion 1j forming the opening 1c of the filling member 1.

The applying body 10 is inside inserted to the opening 1c of the filling member 1 in such a manner that the attaching portion 10b is deflected to an axial side, and is structured, as shown in Figs. 1 and 2, such that a rear end portion of the attaching portion 10b moves forward into the filling member 1 and the annular groove portion 10d is engaged with the peripheral edge portion 1j forming the opening 1c of the filling member 1, whereby the applying body 10 is attached to the filling member 1 so as not to be disengaged and is positioned in the opening 1c. The applying portion 10a of the applying body 10 is elastically deformed so as to be concaved to a rear side by being pressed to the applied portion, and is elastically restored to the original position by being moved apart from the applied portion.

In the case of assembling the applying filler extruding container 100 having the structure mentioned above, the main body side assembly 40 shown in Fig. 18 is obtained by mounting the click spring member 12 in the operating tube 3 so as to be received, screwing the thread tube 4 into the leading end portion of the movable body 6, attaching the elastic body 9 to the

leading end of the movable body 6, coupling the movable body 6 having the elastic body 9 and the thread tube 4 to the shaft body 3c of the operating tube 3, and pressing and attaching the main body tube 2 to the assembly.

On the other hand, in the filling member 1, in a state in which the discharge port 10c of the applying body 10 is closed by a stop plug 13 so as to be reversed, a predetermined amount of applying filler L is filled in the filling region 1x so as to form no space within the leading end of the filling member 1. Further, the filling member 1 filled with the applying filler L is inserted to and attached to the leading end side of the main body side assembly 40. At this time, since an inner peripheral surface of the filling member 1 is set at an initial position while being in slidable contact with the annular protruding portion 9g for securing a water tightness of the elastic body 9, and the air vent groove 1i in the inner peripheral surface thereof is positioned so as to come across the annular protruding portion 9g in the axial direction, the air in the applying filler side is well vented to the rear side through the air vent groove 1i. Further, the stop plug 13 is detached finally. In this case, in place of the stop plug 13, a seal which can be detached after

filling and just before the user uses and to which an adhesive agent is applied, may be attached to the discharge port 10c of the applying body 10 before the filling of the applying filler L.

In accordance with the applying filler extruding container 100 structured as mentioned above, since the filling member 1 filled with the applying filler L is structured such as to be inserted and attached to the leading end side of the main body side assembly 40, it is easy to assemble after filling the applying filler L in the filling member 1, and the applying filler L is in a state of being sufficiently (fully) filled in the filling region 1x between an inner side of the discharge port 10c of the applying body 10 constituting the leading end portion of the filling member 1 and the elastic body 9 attached to the leading end of the movable body 6 of the main body side assembly 40.

Next, a description will be given of a use of the applying filler extruding container 100 structured in the manner mentioned above. In the applying filler extruding container 100, if the main body tube 2 or the filling member 1 and the operating tube 3 are relatively rotated by a user, the movable body 6 moves forward and backward by the engaging mechanism and the rotation preventing mechanism mentioned above, and the

leading end portion 3f of the protrusion 3e in the operating tube 3 constituting the click mechanism 11 mentioned above and the click tooth 12a of the click spring member 12 energized to the leading end portion 3f repeat the click engagement in accordance with the relative rotation at this time. Accordingly, the click feeling is given to the user, and a forward moving degree and a returning degree of the movable body 6 are detected on the basis of the click feeling.

Further, if the user relatively rotates the main body tube 2 or the filling member 1 and the operating tube 3 so as to move the movable body 6 forward while accompanying with the click feeling, at the first applying time after buying the applying filler extruding container 100, the applying filler L is rapidly (immediately) discharged from the discharge port 10c of the applying body 10 as shown in Fig. 19A without repeating the relative rotation more than necessary, because the applying filler L is sufficiently filled in the filling region 1x between the inner side of the discharge port 10c of the applying body 10 constituting the leading end portion of the filling member 1 and the elastic body 9 of the movable body 6 of the main body side assembly 40, as mentioned above. Accordingly, there is provided the applying

filler extruding container 100 in which customer satisfaction is improved.

The user presses the applying portion 10a of the applying body 10 to the applied portion A so as to apply the applying filler L to the applied portion A in this state, as shown in Fig. 19B. At this time, the applying portion 10a of the applying body 10 is elastically deformed so as to be concaved (collapsed) to the rear side on the basis of the pressing to the applied portion A. Since the applying portion 10a of the applying body 10 is elastically deformed as mentioned above, a feeling given to the applied portion A such as a skin or the like is soft and good. Further, since the applying portion 10a of the applying body 10 is pressed and collapsed, an internal pressure is increased, the applying filler L is discharged at a proper amount, and a use amount is secured.

Further, if the application is finished, and the applying body 10 is moved apart from the applied body A, the applying portion 10a of the applying body 10 is elastically restored to the original position (refer to Fig. 19A) as shown in Fig. 19C. At this time, a predetermined space B is formed in an inner side including the discharge port 10c of the applying portion 10a in the applying body 10.

Accordingly, even if the applying filler L filled in the filling region 1x of the filling member 1 and the air mixing into the applying filler L is expanded due to variation of temperature or variation of atmospheric pressure at a time of not being used such as a carrying time or the like, the applying filler L is prevented from leaking from the applying body 10 on the basis of the predetermined space B. Accordingly, it is possible to provide the applying filler extruding container 100 having an improved quality.

Further, in accordance with the applying filler extruding container 100 on the basis of the present embodiment, as shown in Fig. 2, if the movable body 6 reaches the front to the maximum on the basis of the relative rotation between the main body tube 2 or the filling member 1 and the operating tube 3 by the user, the elastic body 9 is brought into contact with the rear end portion of the attaching portion 10b of the applying portion 10 attached to the leading end portion of the filling member 1, and is elastically deformed on the lines of the rear end portion inclined in the circular ring shape. At this time, the elastic body 9 is elastically deformed more preferably on the basis of the space 9d within the elastic body 9. Further, the applying filler L leaving in an approximately

hoof-shaped (oblique circular cylindrical) space (a space including an inclined surface within the container leading end), which cannot be pressed out by the conventional movable body, is sufficiently pressed out with almost no remainder so as to be consumed, on the basis of the elastic deformation of the elastic body 9 mentioned above. Accordingly, there is provided an economic applying filler extruding container 100 in which a waste is reduced.

Further, in accordance with the applying filler extruding container 100, since the structure is made such that the annular groove portion 1g corresponding to the locking portion of the outer peripheral surface of the filling member 1 and the annular protruding portion 2b corresponding to the locking portion between the annular protruding portion 1f and the inner peripheral surface of the main body tube 2, and the protrusion 1h corresponding to the locking portion of the outer peripheral surface of the filling member 1 and the knurling 2a corresponding to the locking portion of the inner peripheral surface of the main body tube 2 are directly locked via no other member, it is possible to make the applying filler extruding container 100 thin. Accordingly, there is provided the applying filler extruding container 100 in which an appearance

and a use feeling are improved.

Further, in accordance with the applying filler extruding container 100, the forward moving degree and the returning degree are detected by a user on the basis of the click feeling given to the user by the click mechanism 11. Accordingly, there is provided the applying filler extruding container 100 having an improved usability.

In this case, in the present embodiment, the movable body 6 can move backward. Accordingly, if the relative rotating force intending to move the movable body 6 existing at the maximum retreated position further backward by the user, there is a risk that the shaft body 3c engaging with the movable body 6 is wrenched off in the bottom surface of the operating tube 3. However, in the present embodiment, since a plurality of protruding portions 3g in the bottom surface of the operating tube 3 and a plurality of grooves 6f in the rear end surface of the movable body 6 are engaged in the rotating direction at the maximum backward moving time of the movable body 6, the rotating force intending to move the movable body 6 further backward and applied to the shaft body 3c is also applied to the protruding portion 3g of the operating tube 3 via the groove 6f of the movable body 6 so as to be

dispersed, thereby preventing the shaft body 3 from being wrenched off. Accordingly, there is provided the applying filler extruding container 100 in which a quality is further improved.

In this case, the structure may be made such that concave portions are provided in place of the grooves 6f of the movable body 6 for preventing the shaft body 3c from being wrenched off, and the concave portions are engaged with the protruding portions 3g of the operating tube 3 in the rotating direction.

Further, as the other example of the shaft body wrench-off preventing mechanism, on the contrary of the shaft body wrench-off preventing mechanism mentioned above, as shown in Fig. 20, the structure may be made such that the convex portions 6h protruding to the rear side are provided at a plurality of positions along the peripheral direction in the rear end surface of the movable body 6, and a plurality of concave portions 3h which the convex portions 6h of the movable body 6 move forward into at the maximum retreated time of the movable body 6 and engage with in the rotating direction are provided in the peripheral edge of the shaft body 3c in the bottom surface of the operating tube 3.

Further, a ratchet spring member 14 shown in Figs.

21 and 22 may be employed in place of the click spring member 12 shown in Figs. 15 and 16. The ratchet spring member 14 is different from the click spring member 12 in a point that the chevron-shaped click tooth 12a is replaced by a so-called ratchet gear 14a having a vertical surface and an inclined surface along a peripheral direction and engaging with the leading end portion 3f (refer to Figs. 6 to 8) of the protrusion 3e of the operating tube 3 so as to allow the rotation only in one direction (the rotation in which the movable body 6 moves forward). Further, the ratchet mechanism is structured by the leading end portion 3f of the protrusion 3e of the operating tube 3, and the ratchet gear 14a and the compression spring portion 12b energizing the ratchet gear 14a to the leading end portion 3f side.

In accordance with the applying filler extruding container having the ratchet mechanism mentioned above, only the relative rotation in one direction is allowed between the main body tube 2 or the filling member 1 and the operating tube 3, the movable body 6 performs only the forward movement while a resistance feeling at a time when the ratchet gears are engaged on the basis of the relative rotation is given to a user, and the applying filler L is discharged so as to be supplied

for application. In this case, the other operations and effects are the same as those of the applying filler extruding container 100 mentioned above. In this connection, since the movable body 6 does not move backward in the case of using the ratchet spring member 14, the concave portion 6f of the movable body 6 and the convex portion 3g of the operating tube 3, or the convex portion 6h of the movable body 6 and the concave portion 3h of the operating tube 3 may be omitted.

Further, in place of the applying body 10 shown in Fig. 17, an applying body 15 having a plurality of discharge ports 15c for discharging the applying filler L may be used as shown in Fig. 23.

Further, an applying body 21 shown in Fig. 24 may be used in place of the applying body 10 shown in Fig. 17. The applying body 21 is formed in an approximately columnar shape, as shown in Fig. 24B, and is structured such that a portion near a center portion of the leading end surface is curved so as to protrude. Further, a discharge port 21c for discharging the applying filler L is provided in the center thereof so as to pass through in an axial direction. Further, an annular groove portion 21e concaved at a predetermined length from a rear end surface to a leading end side is provided in a peripheral edge portion of a rear end surface of

the applying body 21. The annular groove portion 21e is provided so as to deflect an outer portion from the annular groove portion 21e to an axial side so as to easily pressure insert, at a time of pressure inserting the applying body 21 to the opening 1c of the filling member 1. Further, the annular groove portion 21d concaved to the axial side is provided as a structure engaging with the peripheral edge portion 1j forming the opening 1c of the filling member 1, in an outer peripheral surface of the applying body 21.

Further, the applying body 21 is pressure inserted to the opening 1c of the filling member 1, and the annular groove portion 21d thereof is engaged with the peripheral edge portion 1j forming the opening 1c of the filling member 1, thereby being attached to the filling member 1 so as not to be disconnected, and being structured such as to be positioned in the opening 1c of the filling member 1.

The applying body 21 is elastically deformed in such a manner as to be concaved to a rear side by being pressed to the applied portion A at a time of application, as shown in Fig. 24A, and is elastically restored to the original position at a time of being apart from the applied portion A. As shown in Fig. 24B, a predetermined space B is formed in an inner side (a

rear side) of the applying body 21 after application. Accordingly, it is possible to obtain the same effect as that of the applying filler extruding container 100 as mentioned above. In this case, in the embodiment shown in Fig. 24, the leading end surface having the opening 1c of the filling member 1 is formed as a surface which is vertical to the axial direction.

Further, a filling member 16 and an applying body 17 shown in Fig. 25 may be used. The filling member 16 is different from the filling member 1 in a point that the peripheral edge portion forming an opening 16c for discharging the applying filler L is structured such as to have an annular fold-back portion 16d folded back to an outer side, and a bag-shaped annular groove portion 16e for engaging the applying body 17 is formed by the annular fold-back portion 16d. Further, the applying body 17 is different from the applying body 10 in a point that an annular attaching portion 17b protruding to an axial side and a rear side is provided in a peripheral edge portion of a curved disc-shaped applying portion 17a having a discharge port 17c and curved to an outer side.

As a method of firmly fixing the filling member and the applying body, it is possible to employ a method of forming different materials by using a two-color

injection molding machine and pouring two kinds of materials into a core back type metal mold or a core rotation type metal mold, and an insert injection molding method of forming first a first material, and then injection molding a second material by inserting the first formed material to a metal mold. It is preferable to use a thermoplastic hard raw material by setting the first material as the filling member, and use a thermosetting rubber or a thermoplastic elastomer soft raw material by setting the second material as the applying body.

Further, the applying body 17 is structured such that an attaching portion 17b moves forward to the annular groove portion 16e of the filling member 16 so as to be engaged, thereby being attached to the filling member 16 so as not to be disconnected, and an applying portion 17a covers the opening 16c of the filling member 16. Even in the case that the filling member 16 and the applying body 17 are employed, the same operations and effects as those of the applying filler extruding container 100 mentioned above can be achieved.

Further, as shown in Figs. 26 to 28, the structure may be made such that the applying body 20 is elastically restored by an elastic body 19 within a filling member

18 constituting the container.

The filling member 18 is provided with a filling member main body 18a coupled to the main body tube 2 so as to be non-rotatable, and immobile in the axial direction, a filling member leading end portion 18b attached to a leading end portion of the filling member main body 18a, and an applying body holding portion 18c attached to the filling member leading end portion 18b and holding the applying body 20, and is entirely formed in an approximately cylindrical shape.

The filling member main body 18a receives most of the applying filler L to be filled. The filling member leading end portion 18b is structured such that a leading end surface having an opening 18d for discharging the applying filler L is formed as a surface vertical to the axial direction, and is provided with a discharge passage 18e communicating from the opening 18d in the leading end surface to a rear end surface. The discharge passage 18e is structured such that an approximately center portion in the axial direction is formed as a small-diameter narrow passage 18f, and a front side and a rear side of the narrow passage 18f are formed as large-diameter expanded passages 18g and 18h.

The applying body 20 is constituted by an elastic

body made of a porous material, for example, an urethane foam, a fine net-like material or the like, and is formed in a curved disc shape curved to an outer side. A peripheral edge portion bent to a rear side in the applying body 20 is engaged with a leading end portion of the filling member leading end portion 18b and engaged with a leading end portion of the applying body holding portion 18c so as to be pressed, whereby the applying body 20 is attached to the filling member 18, and covers the opening 18d of the filling member 18.

Further, a compression spring 19 serving as the elastic body is arranged in a front side expanded passage 18g of the filling member leading end portion 18b. The compression spring 19 is arranged so as to be pinched between a back surface of the applying body 20 and a peripheral edge portion of the narrow passage 18f of the filling member leading end portion 18b, and is structured such as to always energize the applying body 20 to the outer side.

Further, since the applying filler extruding container having the structure mentioned above is structured such that the filling member 18 in which the applying filler L is filled is inserted and attached to the leading end side of the main body side assembly 40, it is easy to assemble after the applying filler

L is filled in the filling member 18, and there is provided a state in which the applying filler L is sufficiently filled in a filling region 18x between an inner side of the applying body 20 constituting the leading end portion of the filling member 18, and the elastic body 9 attached to the leading end of the movable body 6 of the main body side assembly 40.

Accordingly, in the applying filler extruding container, in the case that the user relatively rotates the main body tube 2 or the filling member 18 and the operating tube 3 while accompanying the click feeling so as to move forward the movable body 6 at the first applying time after buying the applying filler extruding container, the applying filler L is rapidly discharged from the porous portion functioning as a discharge port of the applying body 20 without repeating the relative rotation more than necessary, because the applying filler L is sufficiently filled in the filling region 18x.

Further, when pressing the applying body 20 to the applied portion A and applying the applying filler L to the applied portion A in the same manner as described in Fig. 19B under the state in which the applying filler L is discharged as mentioned above, the applying body 20 is elastically deformed so as to be concaved to the

rear side against the energizing force of the compression spring 19 on the basis of the pressing to the applied portion A. When the application is finished and the applying body 20 is moved apart from the applied portion A, the applying body 20 is elastically restored to the original position shown in Fig. 27 on the basis of the energizing force of the compression spring 19. The predetermined space B is formed in the inner side of the applying body 20 at this time. Accordingly, even if the applying filler L filled in the filling member 18 and the air mixing into the applying filler L are inflated due to the variation of temperature and the variation of atmospheric pressure, the applying filler L is prevented from leaking from the applying body 20 on the basis of the predetermined space B.

Further, as shown in Fig. 27, if the movable body 6 moves forward to the maximum on the basis of the relative rotation between the main body tube 2 or the filling member 18 and the operating tube 3 by the user, the elastic body 9 is brought into contact with the inclined surface in the leading end side of the rear side expanded path 18h so as to be elastically deformed, and the leading end portion of the elastic body 9 bulges so as to move forward to the front side expanded passage

18g through the narrow passage 18f. Accordingly, the applying filler L is well pressed out so as to be consumed. In this case, the other operations and effects are the same as those of the applying filler extruding container 100 mentioned above.

Fig. 29 is a longitudinal sectional view showing an applying filler extruding container in accordance with a second embodiment of the present invention, Fig. 30 is a longitudinal sectional view showing the applying filler extruding container at a time when a movable body moves forward to the maximum, Figs. 31 and 32 are views showing a main body tube, Figs. 33 to 35 are views showing a thread tube, Figs. 36 and 37 are views showing a ratchet spring member, Figs. 38 and 39 are view showing a thread tube pressing member, Figs. 40 to 42 are views showing a filling member, Fig. 43 is an exploded perspective view showing an assembling procedure of the applying filler extruding container, and Fig. 44 is a perspective view of a click spring member used in place of the ratchet spring member.

As shown in Figs. 29 and 30, an applying filler extruding container 200 is provided with a filling member 101 corresponding to a leading tube provided in an inner portion with a filling region 101x in which an applying filler L is filled, a main body tube (a

main body side tube body) 102 coupling the filling member 101 so as to be relatively rotatable and immobile in an axial direction in a state in which a rear half portion of the filling member 101 is inside inserted to a front half portion thereof, as an outer structure. Further, an inner side of the container is generally provided with a movable body 106 having an elastic body 109 via a piston 108 in a leading end portion and freely moving in the axial direction by a relative rotation between the main body tube 102 and the filling member 101, a thread tube 104 serving as an engagement mechanism (an engagement portion) which can move the movable body 106 on the basis of the relative rotation, a thread tube pressing member 105 inhibiting the thread tube 104 from being disengaged in the axial direction, and a ratchet mechanism 111 allowing a relative rotation in one direction for forward moving the movable body 106 and giving a resistance feeling (a click feeling) in accordance with a fixed amount of relative rotation.

As shown in Figs. 31 and 32, the main body tube 102 is structured in a closed-end cylindrical shape, and has a knurling 102a which is provided with a lot of concavities and convexities in parallel in a peripheral direction and in which the concavities and convexities extend at a predetermined length in an axial

direction, in a front side inner peripheral surface from a center portion in an axial direction thereof, and an annular protruding portion 102b in an inner peripheral surface in a leading end side from the knurling 102a. The knurling 102a is provided such as to engage the thread tube pressing member 105 in a rotating direction, and the annular protruding portion 102b is provided such as to engage the thread tube pressing member 105 in an axial direction.

Further, a shaft body (a shaft body portion) 102c is provided in a rising manner in a center portion of a bottom portion in the main body tube 102 toward a leading end side. The shaft body 102c is formed in a non-circular shape in a cross section provided with a protrusion 102d extending in an axial direction so as to be formed in a cross shape in a cross section, and the protrusion 102d is formed as a rotation prevention constituting one of rotation preventing mechanisms (rotation preventing portion) of the movable body 6.

Further, the main body tube 102 is provided with protrusions 102e extending toward the knurling 102a from a bottom portion at sixteen equal positions along a peripheral direction in an inner peripheral surface thereof. The protrusions 102e are provided for

engaging a ratchet spring member 112 mentioned below and constituting a ratchet mechanism 111 in a rotating direction.

The thread tube pressing member 105 is structured in a cylindrical shape having a collar portion 105a in a leading end side, as shown in Figs. 38 and 39, and has an annular groove portion 105b and an annular protruding portion 105c for engaging with the annular protruding portion 102b of the main body tube 102 in the axial direction in an axial direction, at a rear position close to the collar portion 105a in an outer peripheral surface thereof. Further, a plurality of protrusions 105d for engaging with the knurling 102a of the main body tube 102 in a rotating direction are provided along a peripheral direction in the thread tube pressing member 105 so as to extend at a predetermined length in the axial direction, and approximately spiral slits 105e are provided at positions in rear end portions thereof.

Further, the thread tube pressing member 105 is provided with protruding portions (so-called dowels) 105f for detachably locking a cap 107 (refer to Fig. 29) covering a front side of the collar portion 105a of the thread tube pressing member 105 in the axial direction at three equal positions in the peripheral

direction, in a front position close to the collar portion 105a of the outer peripheral surface.

The thread tube pressing member 105 is inside inserted to the main body tube 102 from a rear end portion thereof, as shown in Figs. 29 and 30, a rear end surface of the collar portion 105a is brought into contact with an open end in a leading end side of the main body tube 102, the annular groove portion 105b and the annular protruding portion 105c are engaged with the annular protruding portion 102b of the main body tube 102, and the protrusion 105d is engaged with the knurling 102a of the main body tube 102, whereby the thread tube pressing member 105 is attached to the main body tube 102 so as to be non-rotatable and immobile in the axial direction.

The thread tube 104 is structured in a cylindrical shape and has a collar portion 104a in a rear end portion, as shown in Figs. 33 to 35. The thread tube 104 is provided with a female thread 104c constituting one of engagement mechanisms (engagement portions) in an inner peripheral surface of a front half portion. Further, a protrusion 104d for engaging the filling member 101 in a rotating direction is formed at four positions along a peripheral direction, in the outer peripheral surface of the thread tube 104 so as to extend

at a predetermined length in an axial direction, and a protruding portion 104f for engaging the filling member 101 in an axial direction is formed in a circular arc shape on the protrusion 104d. All of the leading end portions of the protrusions 104d are structured as inclined portions inclined in one direction so as to easily move forward between protrusions 101f and 101f mentioned below of the filling member 101.

Further, the collar portion 104a of the thread tube 104 is structured in an annular shape, and a ratchet gear (a predetermined engagement portion) 104g constituting a ratchet mechanism 111 is provided in a rear end side surface thereof. The ratchet gear 104g is formed by arranging a vertical surface and an inclined surface together along a peripheral direction, and is provided so as to allow the rotation in only one direction in which the movable body 6 moves forward.

The thread tube 104 is structured, as shown in Figs. 29 and 30, the collar portion 104a is arranged between the leading end surface of the protrusion 102e of the main body tube 102 and the rear end surface of the thread tube pressing member 105 so as to be rotatably positioned, and the thread tube 104 is energized to the leading end surface of the protrusion 102e of the main body tube 102 by utilizing an elastic force of

the approximately spiral slit 105e of the thread tube pressing member 105, whereby an improved relative rotational resistance is generated. Further, even if the applying filler extruding container 200 falls down in a leading end direction in a state of being covered with the cap 107, an impact applied to the filling member 101 (in detail mentioned below) fixed to the thread tube 104 is reduced by the slit 105e of the thread tube pressing member 105, and it is possible to inhibit the member from being broken and the applying filler L from being discharged.

The ratchet spring member 112 constitutes a rotating amount regulating member as well as constituting the ratchet mechanism 111, and is formed as an injection molded product by a resin. The ratchet spring member 112 is structured approximately in a cylindrical shape as shown in Figs. 36 and 37, is provided with ratchet gears 112a constituting a concavo-convex portion engaging with the ratchet gear 104g of the thread tube 104 along a peripheral direction, and is integrally formed so as to have a compression spring portion 112b serving as an elastic portion connecting a leading end portion having the ratchet gear 112a. The ratchet gear 112a is structured by arranging a vertical surface and an inclined surface

together along the peripheral direction, in the same manner as the ratchet gear 104g. The compression spring portion 112b is provided with an approximately spiral slit 112c in a peripheral wall thereof, and energizes the pressed ratchet gear 112a against the pressing force by the slit 112c. Further, a plurality of protrusions 112d for engaging with the protrusions 102e of the main body tube 102 in the rotating direction are provided in an outer peripheral surface of a leading end portion of the ratchet spring member 112 along the peripheral direction so as to extend at a peripheral length in an axial direction.

As shown in Figs. 29 and 30, the ratchet spring member 112 is received within the main body tube 102 in such a manner as to be positioned between a bottom surface of the main body tube 102 and the collar portion 104a of the thread tube 104, presses the ratchet gear 112a to the ratchet gear 104g of the collar portion 104a of the thread tube 104 on the basis of an energizing force of the compression spring 112b so as to bring the collar portion 104a into contact with the rear end surface of the thread tube pressing member 105, and is attached to the main body tube 102 so as to be non-rotatable, on the basis of the engagement of the protrusion 112d between the protrusions 102e and 102e

of the main body tube 102. In this state, the ratchet gear 112a is in a state of being engaged with the ratchet gear 104g of the thread tube 104.

Since the leading end side including the collar portion 6a of the movable body 6 described in the first embodiment is omitted, and the movable body 106 is not moved backward by the ratchet mechanism 111, the movable body 106 is formed in a shape in which the concave portion 6f or the convex portion 6h is omitted. Accordingly, the bottom surface of the main body tube 102 is not provided with the convex portion 3g for engaging with the concave portion 6f or the concave portion 3h for engaging with the convex portion 6h. Further, the other structures of the movable body 106 are approximately the same as the movable body 6 of the first embodiment.

The movable body 106 is outside inserted to the shaft body 102c of the main body tube 102 from a rear end portion thereof and is inside inserted to the thread tube 104, and a protrusion 106e provided in an inner peripheral surface in a rear end side is engaged between the protrusions 102d and 102d of the shaft body 102c, and is attached to the main body tube 102 so as to be non-rotatable and movable in the axial direction, in a state in which a male thread 106b provided in an outer

peripheral surface thereof is engaged with a female thread 104c of the thread tube 104.

A piston 108 is attached to a leading end portion of the movable body 106 so as to have approximately the same structure and function as those of the leading end side portion including the collar portion 6a of the movable body 6. Further, an outer peripheral surface in a rear end portion of the piston 108 is provided with an annular protruding portion 108a for securing water tightness, which is provided in the elastic body 9 in the first embodiment.

An elastic body 109 is attached to a leading end portion of the piston 108 so as to have approximately the same structure and function as those of the elastic body 9 described in the first embodiment. In this case, since the elastic body 109 is attached to the leading end portion of the piston 108, a space 109d for promoting an elastic deformation is provided within the elastic body 109, in the same manner as the first embodiment.

Further, the engagement mechanism is structured by the male thread 106b of the movable body 106 and the female thread 104c of the thread tube 104, the rotation preventing mechanism is structured by the protrusion 106e of the movable body 106 and the protrusion 102d of the shaft body 102c, the ratchet

mechanism 111 is structured by the ratchet gear 112a and the compression spring portion 112b of the ratchet spring member 112 and the ratchet gear 104g of the thread tube 104, and the extruding mechanism of the applying filler L structured by them, the movable body 106 and the elastic body 109 are installed in the main body tube 102 serving as the main body side tube body, whereby the main body side assembly 140 is structured (refer to Fig. 43).

The filling member 101 receives the applying filler L, and discharges the applying filler L from the leading end portion in accordance with an operation by a user, and the leading end portion is contacted to the applied portion to use for application. Accordingly, it is preferable that the material of the filling member 101 is constituted by an injection molded plastic such as a polyethylene terephthalate (PET), a polypropylene (PP) or the like, and it is preferable that the material is constituted by a transparent material for checking out a color tone of the applying filler L and a filling condition.

The filling member 101 is structured in a stepped cylindrical shape in which a leading end portion is tapered and a portion from an approximately center portion in an axial direction to a rear end surface

is made small in diameter via an outer peripheral step surface 101d, as shown in Figs. 40 and 41. In the filling member 101, an outer surface 101a forming an applying surface in the leading end portion is formed as an inclined surface which is preferable for applying to the applied portion, for example, a skin or the like. Further, an inner surface 101b formed as an inclined surface at a fixed thickness distance from the outer surface 101a is formed in the leading end portion of the filling member 101, and a plurality of discharge ports 101c communicating the inner surface 101b with the outer surface 101a and provided for discharging the applying filler L are provided therein.

Further, an annular slit 101e communicating between inner and outer sides is provided in a rear portion of the filling member 101, as shown in Figs. 40 to 42, and an inner peripheral surface of the rear portion is provided with a plurality of protrusions 101f extending at a predetermined length in an axial direction from a rear end of the filling member 101 and coming across the slit 101, at a uniform distance along a peripheral direction. Accordingly, in the slit 101e, a portion which the protrusion 101f comes across is formed as a groove 101g, and a portion between the protrusions 101f and 101f is formed as an opening

101h. The opening 101h is provided for engaging the protruding portion 104f of the thread tube 104 in the axial direction, and the protrusion 101f is provided for engaging the protrusion 104d of the thread tube 104 in a rotating direction. Rear end portions of the protrusions 101f are all structured as an inclined portion inclined in one direction in such a manner that the protrusion 104d of the thread tube 104 easily moves forward between the protrusions 101f and 101f. Further, as shown in Fig. 39, an air vent groove 101i open to a rear side and extending short toward the leading end side is provided in an inner peripheral surface of the filling member 101 and a little in a leading end side from the protrusion 101f.

The filling member 101 is inside inserted to the thread tube pressing member 105 from a rear portion side thereof and is outside inserted to the thread tube 104. The outer peripheral step surface 101d is positioned in an open end in a leading end side of the thread tube pressing member 105, as shown in Figs. 29 and 30, the protrusion 104d of the thread tube 104 moves forward between the protrusions 101f and 101f so as to be engaged, and the protruding portion 104f of the thread tube 104 moves forward to the opening 101h so as to be engaged, whereby the filling member 101 is

attached to the thread tube 104 so as to be non-rotatable and immobile in the axial direction, thereby being integrally formed with the thread tube 104, and being attached to the main body tube 102 so as to be rotatable and immobile in the axial direction. Further, as shown in Fig. 29, the cap 107 detachably mounted to the thread tube pressing member 105 in such a manner as to cover the filling member 101 is rotatable with respect to the filling member 101.

In the case of assembling the applying filler extruding container 200 having the structure mentioned above, the main body side assembly 140 shown in Fig. 43 is obtained by receiving the ratchet spring member 112 in the main body tube 102, screwing the thread tube 104 to the leading end portion of the movable body 106, attaching the elastic body 109 to the leading end of the movable body 106 via the piston 108, coupling the movable body 106 having the elastic body 109 and the thread tube 104 to the shaft body 102c of the main body tube 102 so as to mount the thread tube 104 onto the ratchet spring member 112, and attaching the thread tube pressing member 105 to the main body tube 102.

On the other hand, in the filling member 101, in a state in which the discharge port 101c is closed by a stop plug (not shown) so as to be reversed, there

is obtained a state in which no space exists within the leading end of the filling member 101 by filling the filling region 101x with a predetermined amount of applying filler L. Further, the filling member 101 filled with the applying filler L is inserted and attached to the leading end side of the main body side assembly 140. At this time, since an inner peripheral surface of the filling member 101 is set to an initial position while being brought into slidable contact with the annular protruding portion 108a for securing water tightness of the piston 108, and the air vent groove 101i of the inner peripheral surface is positioned so as to come across the annular protruding portion 108a in the axial direction, the air in the applying filler side is well vented to the rear side through the air vent groove 101i. Further, the stop plug is finally detached. In this case, a seal having an adhesive agent which can be detached after the filling and just before a user uses, may be adhered to the discharge port 101c before filling with the applying filler L, in place of the stop plug.

In accordance with the applying filler extruding container 200 shown in Fig. 29 and structured as mentioned above, since the structure is made such that the filling member 101 filled with the applying filler

L is inserted and attached to the leading end side of the main body side assembly 140, it is easy to assemble after filling the applying filler L in the filling member 101, and there is obtained a state in which the applying filler L is sufficiently (fully) filled in the filling region 101x between the inner side of the discharge port 101c of the filling member 101, and the elastic body 109 attached to the leading end of the movable body 106 of the main body side assembly 140.

Next, a description will be given of use of the applying filler extruding container 200 structured as mentioned above. In the applying filler extruding container 200, if the filling member 101 and the main body tube 102 are relatively rotated by a user, the movable body 106 moves forward by the engaging mechanism, the rotation preventing mechanism and the ratchet mechanism 111 mentioned above, and the ratchet gears 104g and 112a constituting the ratchet mechanism 111 mentioned above repeat engagement and disengagement in accordance with the relative rotation at this time. Accordingly, a resistance feeling (the click feeling) is given to the user, and a forward moving degree of the movable body 106 is detected on the basis of the resistance feeling.

Further, if the user relatively rotates the

filling member 101 and the main body tube 102 so as to move the movable body 6 forward while accompanying with the resistance feeling, at the first applying time after buying the applying filler extruding container 200, the applying filler L is rapidly (immediately) discharged from the discharge port 101c without repeating the relative rotation more than necessary, because the applying filler L is sufficiently filled in the filling region 101x between the inner side of the discharge port 101c of the filling member 101 and the elastic body 109 of the movable body 106 of the main body side assembly 140, as mentioned above. Accordingly, there is provided the applying filler extruding container 200 in which customer satisfaction is improved.

Further, in accordance with the applying filler extruding container 200 on the basis of the present embodiment, as shown in Fig. 30, if the movable body 106 moves forward to the maximum on the basis of the relative rotation between the filling member 101 and the main body tube 102 by a user, the elastic body 109 is brought into contact with the inclined inner surface 101b in the leading end portion of the filling member 101, and is elastically deformed on the lines of the inner surface 101b. At this time, the elastic body

109 is elastically deformed more preferably on the basis of the space 109d within the elastic body 109. Further, the applying filler L leaving in an approximately hoof-shaped (oblique circular cylindrical) space (a space including an inclined surface within the container leading end), which cannot be pressed out by the conventional movable body, is sufficiently pressed out with almost no remainder so as to be consumed, on the basis of the elastic deformation of the elastic body 9 mentioned above. Accordingly, there is provided an economic applying filler extruding container 200 in which a waste of the applying filler L is reduced.

Further, in accordance with the applying filler extruding container 200, since the thread tube 104 is received in the main body tube 102 so as to be rotatable and immobile in the axial direction, and the opening 101h corresponding to the locking portion provided in the inner peripheral surface in the rear end side of the filling member 101 and the protruding portion 104f corresponding to the locking portion provided in the outer peripheral surface of the thread tube 104, and the protrusion 101f corresponding to the locking portion provided in the inner peripheral surface in the rear end side of the filling member 101 and the

protrusion 104d corresponding to the locking portion provided in the outer peripheral surface of the thread tube 104 are respectively locked, the filling member 101 is coupled to the thread tube 104 so as to be non-rotatable and immobile in the axial direction, and the structure is made such that the movable body 106 moves on the basis of the relative rotation between the filling member 101 and the main body tube 102. Further, since the cap 107 is not directly locked to the filling member 101 but is rotatable, the movable body 106 is not fed out, even if the cap 107 and the main body tube 102 are relatively rotated at a non-use time when the cap 107 is put on the filling member 101, and thus the applying filler L does not leak out from the discharge port 101c of the filling member 101. Accordingly, there is provided the applying filler extruding container 200 in which a quality is improved.

Further, in accordance with the applying filler extruding container 200, the forward moving degree of the movable body 106 is detected by a user on the basis of the resistance feeling given to the user by the ratchet mechanism 111. Accordingly, there is provided the applying filler extruding container 200 having an improved usability.

In this case, a click spring member 114 shown in

Fig. 44 may be used in place of the ratchet spring member 112 shown in Figs. 36 and 37. This click spring member 114 is different from the ratchet spring member 112 in a point that the ratchet gear 112a is replaced by a click tooth 114a engaging by click with the ratchet gear (the predetermined engagement portion) 104g of the thread tube 104 in such a manner as to form a chevron shape along a peripheral direction and allow the rotation in the forward and reverse directions (the rotation by which the movable body 106 moves forward and backward). Further, the click mechanism is structured by the predetermined engagement portion 104g of the thread tube 104, the click tooth 114a and a compression spring portion 114b energizing the click tooth 114a to the predetermined engagement portion 104g side.

In accordance with the applying filler extruding container having the click mechanism mentioned above, the relative rotation in the forward and reverse directions between the main body tube 102 and the filling member 101 is allowed, and the movable body 106 performs the forward and backward movement while the click feeling is given to a user at a time of being engaged by click on the basis of the relative rotation, and the forward moving degree and the returning degree of

the movable body 106 are detected. In this case, the other operations and effects are the same as those of the applying filler extruding container 200 mentioned above. In this connection, the shapes of the click tooth 114a of the click spring member 114 and the predetermined engagement portion 104g of the thread tube 104 engaged by click therewith are not limited to those mentioned above, and the point is that the shape is made such that the click engagement is executed by the relative rotation in the forward and reverse directions.

Further, since the movable body 106 can move backward as mentioned above, a user returns the movable body 106 a little while detecting the returning degree of the movable body 106 on the basis of the click feeling after the application, whereby it is possible to form a predetermined space B which is the same as that described in the first embodiment, in the inner side of the discharge port 101c of the filling member 101. Accordingly, even if the applying filer L filled in the filling region 101x and the air mixed into the applying filler L are inflated due to variation of temperature and variation of atmospheric pressure, the applying filler L is prevented from leaking out from the discharge port 101c on the basis of the predetermined

space B provided in the inner side of the discharge port 101c.

Further, since the movable body 106 can move forward and backward as mentioned above, it is, of course, preferable in the same manner as the first embodiment that the concave portion or the convex portion is provided in the rear end surface of the movable body 106, and the convex portion moving forward to the concave portion and engaging in the rotating direction or the concave portion to which the convex portion moves forward and engaging in the rotating direction is provided in the bottom surface of the main body tube 102, thereby preventing the shaft body 102c from being wrenched off.

The description is particularly given above of the present invention on the basis of the embodiments, however, the present invention is not limited to the embodiments mentioned above, but a cilia or the like may be planted on the outer surfaces of the applied bodies 10, 15, 17, 20 and 21 and the outer surface 101a forming the applying surface of the filling member 101, or a brush formed by bundling tapered polyester fibers may be attached.

In this case, the male threads 6b and 106b include intermittently arranged projection groups or spirally

and intermittently arranged projection groups which have the same function as the thread ridge. Further, the female threads 4c and 104c include intermittently arranged projection groups, or spirally and intermittently arranged projection groups which have the same function as the thread ridge.